Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.



831B

UNITED STATES DEPARTMENT OF AGRICULTURE AGRICULTURAL RESEARCH ADMINISTRATION BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

INSECT PEST SURVEY

Special Supplement (1951, No. 1)

Issued February 20, 1951

STATUS OF THE EUROPEAN CORN BORER IN 1950 >

Field Data Obtained by State Agricultural Agencies

Compiled and Summarized by E. W. Beck

Division of Cereal and Forage Insect Investigations

Distribution

Limited scouting for the European corn borer was carried on during

September of 1950 by the Bureau of Entomology and Plant Quarantine in cooperation with State authorities in Alabama, Arkansas, Colorado, Georgia, Mississippi,

Oklahoma and South Carolina. 1/ The corn borer had not been reported previously from any of these States. In 1950 it was found in 2 counties in Alabama, 4 in Arkansas, 2 in Colorado, 2 in Georgia, 3 in Mississippi, 3 in Oklahoma, and 1 in South Carolina.



A search for the European corn borer was made in Louisiana in 1950 in the vicinity of an infestation reported in 1948 in the Parish of St. John the Baptist, but none was found. The borer also was not found during a similar search in 1949 at the same site. Apparently the infestation in this locality is either so low that it could not be detected by the type of scouting employed, or the borer has failed to maintain itself in that environment.

Nine previously infested States reported dispersion of the borer within their boundaries in 1950, and the number of counties known to be infested was increased by 5 in Illinois, 15 in Kansas, 6 in Kentucky, 1 in Minnesota, 5 in Nebraska, 3 in North Dakota, 1 in South Dakota, 32 in Tennessee and 6 in Virginia.

The general area in the United States infested by the corn borer prior to 1950, and additional distribution reported in 1950, are shown on map 1. A total of 1,405 counties, 91 of which were added in 1950, are now known to be infested in 36 States.

The counties first reported as infested in 1950 and added to the distribution list were as follows:

Alabama:

Lauderdale Madison

Arkansas:

Clay Crittenden Mississippi Poinsett

Colorado:

Crowley Weld

Georgia:

Murray Rabun

Illinois:

Hardin Johnson Massac Pope Williamson

Kansas:

Cheyenne
Decatur
Finney
Graham
Gray
Hamilton
Harper
Kearney
Meade
Ottawa
Rawlins
Sheridan
Stevens
Thomas

Wabaunsee

Kentucky:

Clinton Cumberland McCreary Pulaski Wayne Whitley

Minnesota:

Lake

Mississippi:

Alcorn Tate Tunica

Nebraska:

Brown Keith Keya Paha Logan Rock

North Dakota:

Bottineau Stark Towner

Oklahoma:

Osage Tulsa Wagoner

South Carolina:

Greenville

South Dakota:

Butte

Tennessee:

Bedford Cannon Coffee Cumberland DeKalb Fentress Giles Hickman Jackson Jefferson Johnson Lawrence Lewis Madison Marshall Maury Monroe Overton Perry Pickett Putnam

Roane
Rutherford
Smith
Sullivan
Trousdale
Unicoi
Warren
Wayne
Weakley
Williamson

Virginia:

Wilson

Botetourt
Montgomery
Pulaski
Roanoke
Russell
Wythe

Abundance

Data on abundance of the European corn borer were obtained by agricultural agencies in the 26 States participating in the survey during the late summer and fall of 1950. The agencies in most of the States followed the procedure of examining 10 fields in each county surveyed, although some examined fewer, and Maine, Massachusetts, Pennsylvania, and Delaware, examined more than that number in one or more counties.

The field sample consisted of the examination of 25 consecutive plants and dissection of 2 of those found infested, except in Maine and Pennsylvania, where more plants were examined and more were dissected. The product of the percent of plants infested and the average number of borers per infested plant, expressed as borers per 100 plants, was used to denote the population for a field. The county population means are the averages of the field populations in the case of all counties except those surveyed in Minnesota and North Dakota. In these two States the county population means were computed as the product of the average percent of plants infested for the county and the average number of borers per infested plant for the county. The Minnesota data for 1949 given in this report were also computed in the above manner and therefore differ somewhat from the 1949 figures previously published. 1

The survey indicated little change from 1949 to 1950 in the low level of abundance of the corn borer in the Eastern States where the average number of borers per 100 plants in 147 comparable counties was 46 in the former and 36 in the latter year. The counties in which increases and decreases occurred were distributed throughout the region.

^{1/} Insect Pest Survey Special Supplement (1950, No. 1), Issued January 19, 1950.

A general decrease in corn borer abundance, from 356 to 97 borers per 100 plants in 476 comparable counties, took place in the North Central States from 1949 to 1950. No count was higher in 1950 than in 1949 in any county surveyed in Illinois, Iowa and Missouri. Only six western counties in Minnesota and eight counties in Wisconsin had means greater in 1950 than in 1949. In southern Indiana, southwestern Ohio and north-central Kentucky the trend of borer populations in 1950 was upward in comparison with that of the general area surveyed to the northwest.

The survey data for each State are summarized in table 1 and given in detail by counties in table 2. The counties surveyed and their approximate populations of borers are shown on map 2.

Table 1.--Summary by States of European corn borer abundance in corn, fall of 1950, compared with data for 1949

	:		:		•	4	<u> </u>
		149	: 19			es surve	yed
	:Number	:Average		:Average		years	
	of	:number of		:number of	: Number	: Borer	
		:borers per			: of	: 100 p	
State	surveyed	:100 plants	:surveyea	:100 plants	: counties	: 1949	1950
Eastern United	d States					- *	
Connecticut	8	15	8	13	8	,15	13
Delaware	3	70	3	. 36	3	70	36
Maine	11	17	10	20	. 8	18.	22
Maryland	23	38	23	24	23	38	24
Massachusetts	4	46	í	12	í	16	12
New Hampshire	8	105	$\overline{7}$	16	6	118	16
New Jersey	20	43	20	48	19	43	48
New York	20	33	20	48	20	33	48
North Carolina		35	~~	-	~~		-
Pennsylvania	45	58	48	41	41	58	40
Rhode Island	3	48	3	45	2	33	41
Vermont	8	3	8	$\tilde{2}$	7	3	2
Virginia	12	91	9	120	6	97	92
West Virginia	3	44	4	85	3	44	39
Total			164		147		
Average						- 46	36
o o							
North Central	States						
Illinois	40	383	52	51	<i>3</i> 8	400	54
Indiana	70	277	70	136	70	277	136
Iowa	99	802	99	138	99	802	138
Kansas		400	30	35	-	-	
Kentucky	9	52	14	173	7	57	163
Michigan	13	109	13	20	4	79	29
Minnesota	67	350	81	99	67	340	106
Missouri	23	120	18	40	11	187	39
Nebraska	66	90	71	45	65	91	48
North Dakota	29	40	37	14	29	39	16
Ohio	31	309	25	163	25	340	163
South Dakota	26	202	16	196	9	370	228
Wisconsin	57	192	54	52	52	213	51
Total	- 530		580		476		
Average						- 356	97
United States							
Total			77//		623		
Average			744		025	- 283	83
weige						~0)	

Table 2.--European corn borer abundance in corn, fall of 1950, compared with data for 1949

	: Average		:		ge number
	: of borer		0		rers per
State and	: <u>100 plan</u>		: State and	: 100 p	
county	: 1949 :	1950	county	: 1949	: 1950
Connecticut			Illinois (Continued)	
(Agr. Expt. Sta.)			West		
			Adams	229	110
Fairfield	4	6	Brown	93	86
Hartford	9 2	18	Hancock	230	24
Litchfield		6	Henderson	405	28
Middlesex	24	32	Knox	352	37
New Haven	15	21	McDonough	285	$\frac{-75}{60}$
New London	17	12	Average	266	60
Tolland	25	8			
Windham	2 <u>5</u> 15	2	Central		
State mean	15	13	Logan	81	46
			McLean	598	37
Delaware			Macon	263	19
(Agr. Expt. Sta.)			Peoria	510	38 22 32
			Woodford	460	
Kent	59	34	Average	382	32
New Castle	23	10	e e		
Sussex	128	64	East		4.0
State mean	70	36	Champaign	422	80
			Iroquois	661	73
Illinois			Kanka k ee	845	36
(Agr. Expt. Sta. a		,	Livingston	688	54
Natural History S	Survey Divn.)	Vermilion	424	51
			Average	608	59
Northwest	404		W Constitutes		
Bureau	808	46	West Southwest		7.4
Jo Daviess	725	125	Cass	93	16
Mercer	177	8	Christian	100	49
Ogle	580	98	Greene	e des	83 101
Whiteside	588	80	Macoupin	-	
Winnebago	<u>311</u>	$\frac{87}{74}$	Madison Pike	90 4 0	46 11
Average	532	74			
27 12 1			Sangamon	<u>114</u> 87	<u>34</u> 49
Northeast	601	776	Average	0/	49
Boone	624	76	East Southeast		
De Kalb	712	49 30	Clark	88	47
Du Page	755 600	132	Coles	51	4/
Lake	609	80	Douglas	77	-
La Salle	855		Effingham	-	97
Will	1024	$\frac{27}{66}$	Jasper	106	63
Average	763	00	Lawrence	48	32
			Marion	40	55
			Moultrie	89	58
			Average	76	59
			*** 0 * 0 0	, 0	,,

Table 2 (Continued	1)				
	: Average	number	*	: Avera	ge number
	: of bore		• '	of bo	rers per
State and	: 100 plan	nts	: State and	: 100 p	lants
county	: 1949 :		: county	: 1949	: 1950
Illinois (Continued))		Indiana (Continued)		,
Southwest			Northeast	~00	
Clinton	-	20	Adams	522	140
Jackson	en-vib	11	Allen	462	83
Johnson		9	De Kalb	442	73
Randolph		18	Huntington	230	175
St. Clair	97	<u>36</u> 19	Lagrange	73	159
Average	97	19	Noble	479	.72
			Steuben	90	95
Southeast			Wells	544	170
Edwards-Wabash		69	Whitley	581	117
Franklin	-	8	Average	380	120
Jefferson	~	57			
Pope	~	11	West	10	
White		24	Clay	62	65
Average		34	Fountain	153	75
			Montgomery	246	35
State mean			Owen	97	29
comparable			Parke	388	77
counties (38	3) 400	54	Putnam	638	302
			Tippecanoe	418	100
<u>Indiana</u>			Vermillion	248	61
(State Dept. of Co			Vigo	84	53.
and Purdue Agr. H	ixpt. Sta.)	Warren	1.58	104
Northwest			Average	249	90
Benton	วา ฮ	167	Central		
	318		Bartholomew	327	211
Jasper	448	137			
Lake	380	105	Boone	296	77
La Porte Newton	324	203	Clinton	93	217
Porter	250	84	Decatur	380	61
Pulaski	352	211	Grant	21 <i>5</i> 124	83
Starke	547	139	Hamilton	104	69
White	369	86	Hancock	226	1.12
	<u>522</u>	61	Hendricks		88
Average	390	132	Howard Johnson	173 288	259
North Central				182	98
Carroll	115	00	Madison	265	360
	445	88	Marion	200	149
Cass Elkhart	293	113	Rush	192	2,24
Fulton	424	158	Shelby		
Kosciusko	426	108 67	Tipton	209	$\frac{78}{142}$
	190 438		Åverage	209	142
Manchall	430	144			
Marshall Miami	7.20	1 1/2			
Miami	128	46 101			
Miami St. Joseph	265	101			
Miami					

Table 2.--(Continued)

1120117 20 (******************************						
	: Avera			:		:	Avera		
	of box		-	:		:	of bo		
State and	: 100 p		Contraction of the Party of the	:		•	100 p	-	
county	: 1949	:	1950	:	county	_ :	1949	:	1950
Indiana (Continued)					Iowa (Continued)				
East					District 2				
Blackford	219		176		Cerro Gordo		1121		71
Delaware	291		87		Floyd		1575		178
Fayette	301		229		Hancock		1019		133
Henry	411		106		Kossuth		1200		132
Jay	279		202		Mitchell		1.300		93
Randolph	273		205		Winnebago		1008		100
Union	358		201		Worth		1092		75 114
Wayne	<u>355</u>		204		Average		1183		114
Average	311		176						
					District 3				
Southwest					Allamakee		760		104
Gibson	28	4	89		Chickasaw		869		142
Knox	40		207		Clayton		738		127
Posey	14		195		Fayette		1070		146
Sullivan	$\frac{17}{2}$		87		Howard		476		163
Average	25		144		Winneshiek		567		$\frac{72}{124}$
					Average		757		124
Southeast	000		705		District 4				
Dearborn	270		195 184		Buena Vista		1425		446
Franklin Jefferson	270 293		377		Calhoun		667		90
Ohio	139		241		Cherokee		1020		319
Ripley	452		175		Ida		760		250
Switzerland	44		202		Plymouth		1460		450
Average	245		229		Pocahontas		814		237
217 02 0.60	~47		~~,		Sac		667		537
State mean					Woodbury		977		<u>262</u> 317
comparable					Average		974		317
counties (70) 277		136						
·	•				District 5				
Iowa					Butler		1094		60
(State Dept. of Ag	ri. and				Franklin		855		145
Agr. Expt. Sta.)					Grundy		1180		52
					Hamilton		457		73
District 1					Hardin		1029		125
Clay	1417		191		Humboldt		1467		32 <i>5</i>
Dickinson	950		490		Webster		957		216
Emmet	1066		284		Wright		<u>1824</u> 1122		155 144
Lyon	1394		466		Average		エエベス		7.444
O'Brien	1662		488						
Osceola	1640 1640		245 252						
Palo Alto Sioux	2425		560						
Average	1561		383						
WAGTURE	عد الريد								

Table 2.--(Continued)

State and county	: Average : of bore : 100 pla : 1949	nts :	State and county		ge number rers per lants
OU UIT U,	<u> </u>	1770	00 0.110,9	• 4747	• 1950
Iowa (Continued)			Iowa (Continued)		
District 6			District 10		
Black Hawk	708	78	Adair	388	34
Bremer	1850	114	Adams	127 606	55
Buchanan Clinton	690 200	65 46	Cass Fremont	288	79 67
Delaware	851	148	Mills	123	78
Dubuque	667	222	Montgomery	848	88
Jackson	536	113	Page	492	55
Jones	508	99	Pottawattamie	780	117
Linn	_560	47	Taylor	336	_110
Average	684	101	Average	486	79
District 7			District 11		
Audubon	685	236	Appanoose	126	71
Carroll	1258	188	Clarke	912	125
Crawford	1871	359	Decatur	230	98
Greene	1105	133	Lucas	750	66
Guthrie	342	72	Madison	658	137
Harrison	794	230	Mahaska	525	35
Monona	1270	242	Marion	590	32
Shelby	1110	189	Monroe	323	2
Average	1104	216	Ringgold	562	34
			Union	76	16
District 8	// ~	0.77	Warren	386	55
Boone	665	97	Wayne	179	<u> 54</u> 60
Dallas Jasper	633 850	70 87	Average	445	80
Marshall	883	83	District 12		
Polk	981	56	Davis	238	39
Poweshiek	382	22	Des Moines	307	17
Story	689	52	Henry	246	21
Tama	857	26	Jefferson	181	20
Average	747	61	Lee	230	33
			Van Buren	. 257	. 37
District 9			Wapello	309	30
Benton	560	9	Average	255	28
Cedar	240	35			
Iowa	275	17	State mean		
Johnson Keokuk	363 100	21 27	comparable counties (99)	802	138
Louisa	190 300	19	countres (99)	002	טעב
Muscatine	283	36			
Scott	182	20			
Washington	367	<u>34</u>			
Average	301	24			

county : 1949 : 1950 : county : 1949 : 1940 : 194			e number :		: Average	
county 1949 1950 county 1949 19 anses Kentucky (Agr. Expt. Sta.) 6 Of Kansas) Bourbon 86 Northwest Boyle 58 Oreham - 1 Bullit 13 Christian - Feyette 12 12 Clay - 48 Herdin 31 31 31 31 31 31 32 32 33 34 33 34 <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>						
Morthwest Bourbon Section	State and					
Centomological Commission of Kanses Bourbon S6 Boyle 58 S8 Cenhem - 1 Bullitt 13 Christian - Fayette 12 Christian - Christian Christian - Christian - Christian - Christian Christian - Christian Christian - Christian - Christian - Christian Christian - Christian Christian - Chr	ounty	: 1949	: 1950 :	county	: 1949 :	1950
Centomological Commission of Kanses Bourbon S6 Boyle 58 S8 Cenhem - 1 Bullitt 13 Christian - Fayette 12 Christian - Christian Christian - Christian - Christian - Christian Christian - Christian Christian - Christian - Christian - Christian Christian - Christian Christian - Chr				Vantuales		
Northwest Bourbon 86		ommi agi on			-	
Northwest Bourbon 86 Regule 58 Cachem - 1 Bullitt 13 Christian -		OUTHITZZZOU		(Agr. Expt. Sta.,	1	
Northwest Boyle 58 Crehem - 1 Bullitt 13 Christian - Fayette 12 Clay - 48 Hardin 31 Cloud - 8 Hart - Jewell - 16 Jefferson 127 Mitchell - 6 Jessemine - Osborne - 16 Larue - - Phillips - 5 Meade 18 Republic - 18 Microer - Rocks - 8 Nelson 51 Smith - 2 Scott - Washington - 33 Werren - Woodford 69 Mortheest- Kerveage 16 Woodford 69 Meane Comparable Counties (7) 57 Doniphan - 194 Jackson - 32 Meine (State Dept. of Agr. and Agr. Expt. Sta.) Mershall - 54 Memaha - 106 Androscoggin 6 Pottawatomie - 24 Cumborland 17 Riley - 16 Franklin 2 Average Kenox 19 Hincoln 13 Anderson - 2 Oxford 6 Douglas - 52 Penobscot 15 Frenklin 14 Piscataquis 7 7 7 7 7 7 7 7 7	of Kansas)			Doumhon	86	126
Carehem	37 134					38
North Central Cley			3	•	_	. ا
North Central	Graham	-			13	2
Clay	27 6 3				10	16
Cloud			15			
Jewell		-			31	3 7
Mitchell - 6 Jessemine - 0sborne - 16 Larue - - 18 Meade 18 18 Republic - 18 Mercer -		-			705	
Osborne		_			12.1	25
Phillips		-			_	49
Republic - 18 Herrer - Rocks - 8 Nelson 51 Smith - 2 Scott - Warren -		-			_	4
Rooks	Phillips				18	6
Smith - 2 Scott - Washington - 33 Warren - Average 16 Woodford 69 Northeast State mean - Atchison - 60 comparable Brown - 54 counties (7) 57 Doniphan - 194 counties (8) 18 Maine - 194 counties (8) 18 Maine - 24 counties (8) 18 Maine - 24 counties (8) 18 Maine - 24 counties (8) 18	Republic	-	18		-	9
Washington	Rooks	_	8	Nelson	51	
Washington Average - 33 Warren Woodford - 69 Northeast Atchison - 60 comparable counties (7) 57 Brown - 54 counties (7) 57 Doniphan - 194 counties (7) 57 Jackson - 32 Maine Jefferson - 55 (State Dept. of Agr. and Agr. Expt. Sta.) Marshall - 78 and Agr. Expt. Sta.) Marshall - 54 (State Dept. of Agr. and Agr. Expt. Sta.) Nemahe - 106 Androscoggin 6 Pottawatomie - 24 Cumberland 17 Riley - 16 Franklin 2 Average - 16 Franklin 2 Average - 16 Franklin 2 Anderson - 2 Oxford 6 Douglas - 52 Penobscot 15 Franklin - 14 Piscataquis - 7 Johnson - 30 Sagadahoc - 5 Lyon - 24 Waldo 11 Miami - 2 Oxford 82 Shawnee - 63 State mean comparable counties (8) 18		_	2	Scott	-	29
Northeast			33	Warren	_	26
Northeast	_		16	Woodford	69	11
Atchison - 60 comparable counties (7) 57 Brown - 54 counties (7) 57 Doniphan - 194 Jackson - 32 Maine Jefferson - 55 (State Dept. of Agr. and Agr. Expt. Sta.) Marshall - 54 Nemshall and Agr. Expt. Sta.) Nemshall - 54 Cumberland 17 Nemshall - 24 Cumberland 17 Riley - 16 Franklin 2 Average - Kennebec - Knox 19 Lincoln 13 Anderson - 2 Oxford 6 Douglas - 52 Penobscot 15 Franklin - 14 Piscataquis - 7 Johnson - 30 Sagadahoc Linn - 4 Somerset 5 Lyon - 24 Waldo 11 Miami - 2 State mean comparable counties (8)	1401020		2.0			
Brown	Northeast					
Doniphan	Atchison	-				- /
Jackson - 32 Maine Jefferson - 55 (State Dept. of Agr. Leavenworth and Agr. Expt. Sta.) Marshall - 78 and Agr. Expt. Sta.) Marshall - 54 Nemaha - 106 Androscoggin 6 Pottawatomie - 24 Cumberland 17 Riley - 16 Franklin 2 Average - 67 Kennebec - Knox 19 Lincoln 13 Anderson - 2 Oxford 6 Douglas - 52 Penobscot 15 Franklin - 14 Piscataquis 7 Johnson - 30 Sagadahoc - Linn - 4 Somerset 5 Lyon - 24 Waldo 11 Miami - 2 York 82 Osage - 63 State mean comparable Counties (8) 18 <td>Brown</td> <td>_</td> <td>54</td> <td>counties (7</td> <td>) 57</td> <td>16</td>	Brown	_	54	counties (7) 57	16
Jackson - 32 Maine Jefferson - 55 (State Dept. of Agr. Leavenworth - 78 and Agr. Expt. Sta.) Marshall - 54 Nemaha - 106 Androscoggin 6 Pottawatomie - 24 Cumberland 17 Riley - 16 Franklin 2 Average - Kennebec - Knox 19 Lincoln 13 Anderson - 2 Oxford 6 Douglas - 52 Penobscot 15 Franklin - 14 Piscataquis 7 Johnson - 30 Sagadahoc - Linn - 4 Somerset 5 Lyon - 24 Waldo 11 Miami - 2 York 82 Osage - 63 State mean comparable Average - 63 State mean counties (8)	Doniphan	_	194			
Jefferson - 55 (State Dept. of Agr. and Agr. Expt. Sta.) Marshall - 54 Nemaha - 106 Androscoggin 6 Pottawatomie - 24 Cumberland 17 Riley - 16 Franklin 2 Average 67 Kennebec - Knox 19 Lincoln 13 Anderson - 2 Oxford 6 Douglas - 52 Penobscot 15 Franklin - 14 Piscataquis 7 Johnson - 30 Sagadahoc - Linn - 4 Somerset 5 Lyon - 24 Waldo 11 Miami - 2 York 82 Osage - 26 State mean Average - 63 State mean Average - 63 State mean Average - 0 0 -		-		Maine		
Leavenworth		_	_	(State Dept. of	agr.	
Marshall - 54 Nemaha - 106 Androscoggin 6 Pottawatomie - 24 Cumberland 17 Riley - 16 Franklin 2 Average 67 Kennebec - Knox 19 Lincoln 13 Lincoln 13 0xford 6 Douglas - 52 Penobscot 15 Franklin - 14 Piscataquis 7 Johnson - 30 Sagadahoc - Linn - 4 Somerset 5 Lyon - 24 Waldo 11 Miami - 2 York 82 Osage - 26 State mean comparable Average - 24 Comparable counties (8) 18		_				
Nemaha - 106 Androscoggin 6 Pottawatomie - 24 Cumberland 17 Riley - 16 Franklin 2 Average 67 Kennebec - Knox 19 Lincoln 13 Anderson - 2 Oxford 6 Douglas - 52 Penobscot 15 Franklin - 14 Piscataquis 7 Johnson - 30 Sagadahoc - Linn - 4 Somerset 5 Lyon - 24 Waldo 11 Miami - 2 York 82 Osage - 26 State mean comparable Average 24 Comparable counties (8) 18		_		2	·	
Pottawatomie		_		irdroscoggi n	6	
Riley		-				,
Average 67 Kennebec -		-				_
Knox 19 Lincoln 13 Anderson - 2 Oxford 6 Douglas - 52 Penobscot 15 Franklin - 14 Piscataquis 7 Johnson - 30 Sagadahoc - Linn - 4 Somerset 5 Lyon - 24 Waldo 11 Miami - 2 York 82 Osage - 26 Shawnee - 63 State mean Average 24 comparable counties (8) 18	-	-			~	2
Lincoln 13 13 13 15 15 15 15 15	Average		67		10	
Anderson - 2 Oxford 6 Douglas - 52 Penobscot 15 Franklin - 14 Piscataquis 7 Johnson - 30 Sagadahoc - Linn - 4 Somerset 5 Lyon - 24 Waldo 11 Miami - 2 York 82 Osage - 26 Shawnee - 63 State mean Average 24 Comparable counties (8) 18						2
Douglas	East Central					-
Franklin - 14 Piscataquis 7 Johnson - 30 Sagadahoc - Linn - 4 Somerset 5 Lyon - 24 Waldo 11 Miami - 2 York 82 Osage - 26 Shawnee - 63 State mean Average 24 comparable counties (8) 18	Anderson	_				-
Franklin - 14 Piscataquis 7 Johnson - 30 Sagadahoc - Linn - 4 Somerset 5 Lyon - 24 Waldo 11 Miami - 2 York 82 Osage - 26 Shawnee - 63 State mean Average 24 comparable counties (8) 18	Douglas	_				
Johnson - 30 Sagadahoc - Linn - 4 Somerset 5 Lyon - 24 Waldo 11 Miami - 2 York 82 - Osage - 26 State mean comparable counties (8) 18		_	14		7	
Linn - 4 Somerset 5 Lyon - 24 Waldo 11 Miami - 2 York 82 Osage - 26 Shawnee - 63 State mean Average 24 comparable counties (8) 18		_	30	Sagadahoc	_	2
Lyon - 24 Waldo 11 Miami - 2 York 82 - Osage - 26 Shawnee - 63 State mean comparable counties (8) 18						
Miami - 2 York 82 - 26		_		Waldo		2
Osage - 26 Shawnee - 63 Average 24 Comparable counties (8)					82	
Shawnee - 63 State mean comparable counties (8) 18						
Average 24 comparable counties (8) 18		_		State mean		
counties (8) 18		-	- 03			
	Average		24) 18	2
	State mean		35	Countries (6	, 10	

	: Average :		•	: Average	
	of borer		· Ctata and	: of borer	
State and county	: 100 plan : 1949		: State and : county	: 100 plan : 1949	1950
country.	• 1/4/		Country	• 1747 •	1900
Maryland			Michigan		
(Agr. Expt. Sta.)			(Extension Service	:e)	
/22	7.0	2 ~			
Allegany	12	17	Cass	80	61
Anne Arundel Baltimore	8 76	12 21	Clinton Eaton		20 18
Calvert	1	5	Gratiot	_	21
Caroline	5	22	Hillsdale	52	~ <u>_</u>
Carroll	117	23	Ingham)~ 	14
Cecil	4	16	Jackson	120	-
Charles	2	2	Kalamazoo	54	24
Dorchester	24	32	Kent	180	
Frederick	97	38	Lenawee	128	
Garrett	10	13	Livingston	_	29
Harford	2	27	Macomb	65	2
Howard	54	16	Monroe	240	-
Kent	6	13	Oakland	_	1
Montgomery	59	59	Ottawa	96	. —
Prince Georges	11	17	Saginaw	_	9
Queen Annes	10	16	St. Clair	14	7 /
St. Marys	Tr *	8 17	St. Joseph Sanilac	12	14
Somerset Talbot	33 15	8	Shiawassee	12	16
Washington	79	44	Van Buren	115	30
Wicomico	138	51	Wayne	258	–
Morcester	111	81		_~	
			State mean		
State mean			comparable		
comparable			counties (4)	79	29
counties (23)	38	24			
			<u>Minnesota</u>		
Massachusetts .			(State Dept. of A	gr.)	
(Agr. Expt. Sta.)					
7	3/	20	Northwest		,~
Franklin	16	12	Becker	gards.	47
			Clay	_	23
			Clearwater Kittson	-	5 1
			Mahnomen	_	23
			Marshall		8
			Norman	_	8
			Pennington	-	4
			Polk	_	10
			Red Lake	-	<u>8</u>
			Average		13

^{*} Trace -- Average less than one.

Table 2.--(Continued)

	: Average	number :		: Avera	ge number
	: of bore				rers per
State and	: 100 pla	-	State and	: 100 pi	-
county			county	: 1949	: 1950
Minnesota (Continued)		Minnesota (Continued)	
North Central	,		East Central	,	
Beltrami	_	6	Aitkin	125	8
Cass	78	30	Anoka	258	68
Hub bard	70	17	Carlton	66	1
Itasca	_	1	Chisago	236	68
Average	78	14	Crow Wing	97	17
nver age	70	-4	Hennepin	418	62
West Central			Isanti	230	55
	82	11.8	Kanabec	55	39
Big Stone				165	29
Chippewa	114	206	Mille Lacs		
Douglas	272	92	Pine	35	44
Grant	146	68	Ramsey	00.5	175
Lac qui Parle	557	109	Washington	22 <u>5</u> 174	<u> 54</u> 52
Otter Tail	103	72	Average	1.74	52
Pope	150	128			
Stevens	171	261	Southwest	/	
Swift	138	293	Cottonwood	296	403
Traverse	122	91	Jackson	515	315
Wilkin	82	111	Lincoln	320	126
Yellow Medicine	_335	_142	Lyon	721	294
Âverage	189	141	Murray	568	151
9			Nobles	950	168
Central			Pipestone	209	144
Benton	182	27	Redwood	393	197
Carver	445	131	Rock	610	198
Kandiyohi	306	101	Average	509	222
McLeod	354	158			
Meeker	235	131	South Central		
Morrison	331	16	Blue Earth	608	221
Renville	390	49	Brown	433	76
Scott	705	95	Faribault	550	216
	184	19	Freeborn	709	71
Sherburne	286	129	Le Sueur	267	50
Sibley		27	Mar ti n	450	275
Stearns	198		Nicollet	443	81
Todd	120	52		520	34
Wadena	60	6	Rice	714	23
Wright	448	106	Steele	1230	70
Average	303	75	Waseca Watonwan		381
				<u>545</u> 588	136
			Average	700	טעב

Table 2.--(Continued)

State and	of bor	ge number rers per lants : 1950	: State and county		ge number rers per lants : 1950
Minnesota (Continued) Southeast Dakota Dodge Fillmore Coodhue Houston Mower Olmstead	160 486 280 547 286 438 425	59 36 15 85 24 44 34	Missouri (Continued) Ralls Ray Randolph Schuyler Scotland Warren Worth	63 28 87 - 0 237	34 - - 45 47 - 29
Wabasha Winona Average	455 173 361	55 29 42	State mean comparable counties (11)	187	39
State mean comparable counties (67) Missouri (Agr. Expt. Sta.)	340	106	Nebraska (Agr. Expt. Sta.) North Central Boyd Brown	25 -	53 . 7
Adair Andrew Atchison Boone Carroll Clark Clay Daviess	58 - 136 18 108 125 40	- 37 41 - - 30 -	Garfield Holt Keya Paha Logan Loup Rock Wheeler Average	8 10 - - 2 - 0 9	24 5 11 1 140 16 2 25
Gentry Grundy Harrison Holt Knox Lewis Linn Livingston Macon Marion Mercer Montgomery Nodaway Platte Putnam	360 145 374 - 32 101 - 150 18 170 199 56 145 114	94 22 - 44 45 - 53 23 34 - 61 25 0 53 -	Northeast— Antelope Boone Burt Cedar Cuming Dakota Dixon Knox Madison Pierce Stanton Thurston Wayne Average	46 75 553 415 154 130 130 191 137 204 187 223 264 222	17 43 163 147 82 315 226 109 78 126 122 215 200 142

(**************************************	,				
	Average	number:		: Averag	e number
	of bore			_	ers per
State and	100 plan	-	State and	: 100 pl	_
	1949 :		county	: 1949	: 1950
				. = / = /	
Nebraska (Continued)			Nebraska (Continued)		
Central			South Central		
Buffalo	19	23	Adams	10	2
Custer		26	Franklin	11	2 3 9 2
Dawson	4 73	10	Furnas	11	2
	78			1	7
Greeley		35	Gosper	i	2
Hall	14	60	Harlan		4
Howard	6	12	Kearney	38	0
Sherman	24	26	Phelps	32	0
Valley	139	58	Webster	<u>0</u>	<u>6</u>
Average	45	31	Average	13	4
	,				
East Central			Southeast		
Butler	33	17	Clay	33	4
Cass	154	65	Fillmore	3	6
Colfax	176	27	Gage	25	14
Dodge	248	64	Jefferson	2	16
Douglas	215	55	Johnson	18	9
Hamilton	117	17	Nemaha	48	11
Lancaster	41	18	Nuckolls	2	1
Merrick	69	34	Otoe	116	51
Nance	36	23	Pawnee	7	13
Platte	224	49	Richardson	41	30
Polk	73	14	Saline	26	3
	367	38	Thayer	10	í
Sarpy		32	Average	28	30 3 — 1 13
Saunders	104		Average	~0	±)
Seward	101	8	C+-+		
Washing to n	331	145	State mean		
York	29	<u>15</u> 39	comparable	0.7	48
Average	145	39	counties (65)	91	40
Southwest			New Hampshire	e 🔨	
Frontier	2	1	(State Dept. of Agr	•)	
Hitchcock	8	1 0 2		7.00	0.4
Keith		0	Belknap	122	28
Lincoln	14	2	Carroll	78	26
Redwillow	18	<u>4</u> 2	Cheshire	9	_
Average	10	2	Grafton	56	4
			Hillsboro	168	14
			Merrimack		19
			Rockingham	184	7
			Strafford	102	17
			Sullivan	18	-
			State mean		
			comparable		
			counties (6)	118	16
			00 41101100 (0)		

Table 2.--(Continued)

		ge number	:			ge number
		ers per	:			rers per
	: 100 p			State and	: 100 p	
county	1949	: 1950	:	county	: 1949	: 1950
New Jersey				New York (Continued)		
(State Dept. of Agr	,)			Rensselaer	45	11
(Doade Debo. of War	• /			Saratoga	23	26
Atlantic	67	39		Schenectady	12	44
Bergen	33	119		Suffolk	37	222
Burlington	142	39		Ulster	35	42
Camden	93	138		Wayne	5	16
Cape May	135	60		•	-	
Cumberland	30	18		State mean	33	48
Essex-Union	60	58				
Gloucester	41	53		North Dakota		
Hunterdon	6	9		(Agr. Expt. Sta.)		
Mercer	21	124				
Middlesex	18	65		Barnes	70	20
Monmouth	37	17		Benson	5	3
Morris	16	18		Bottineau		3 5 9
Ocean	89	6		Burleigh	28	
Passaic	9	49		Cass	126	36
Salem	7	14		Cavalier	42	5
Somerset	Tr	10		Dickey	32	15
Sussex	15	39		Eddy		1
Warren	2	25		Emmons	1	1
Chal				Foster	14	4
State mean				Grand Forks	122	34
comparable	, ,	10		Griggs	28	12
counties (19)	43	48		Kidder	8	4
New York				La Moure	49	14
(State Dept. of Agr				Logan	6	2
and Agr. Expt. Sta				McHenry McIntosh	3	10
and Agr. Dapo. Doa	. •)			McLean		2
Albany	21	40		Mercer	4	2
Columbia	75	27		Mor to n	2	2 2 2 2
Dutchess	33	4		Nelson	70	18
Erie	61	62		Oliver	-	2
Gre ene	70	73		Pembina	126	22
Livingston	7	7		Pierce	_	4
Monroe	17	9		Ramsey	12	3
Nassau	16	258		Ransom	48	64
Niagara	62	19		Richland	117	107
Oneida	11	21		Sargent	13	10
Onondaga	53	38		Sheridan		
Ontario	2	3		Stark	end.	6 3 5
Orange	24	20		Steele	20	5
Orleans	53	28		Stutsman	19	10

Table 2.--(Continued)

State and	of bor 100 p		: State and	: of bo	
county	1949	: 1950	: county	: 1949	: 1950
North Dakota (Continu	ued)	2	Ohio (Continued)		
Traill	65	3 35	Central Fayette	497	7 2 m²
Walsh	80	26	Franklin	337	147
Ward	13	20	Madison		67
Wells	12		Pickaway	329	
METTP		Tr	Average	<u>345</u> 377	<u>115</u> 110
State mean			AV61 45 6	211	<u> </u>
comparable			Southwest		
counties (29)	39	16	Butler	103	219
		20	Greene	366	270
Ohio			Hamilton	104	-
(Agr. Expt. Sta.)			Montgomery	188	362
(1.61 • 2.11)			Preble	139	495
Northwest			Average	180	336
Allen	214	160	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7		
Defiance	221	_	State mean		
Fulton	303	259	comparable		
Hancock	. 280	246	counties (25)	340	163
Henry	493	80	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	2.45	
Lucas	342	90	Pennsylvania		
Ottawa	133	26	(State Dept. of Agr.		
Paulding	193	54	and Extension Servi		
Putnam	472	174		,	
Van Wert	258	120	Northwest		
Williams	326	45	Crawford	7	18
Wood	239	37	Erie	27	20
Average	290	117	Mercer	41	45
11701080	~/0		Venango	-	25
Northeast			Average	25	27
Wayne	115				
			North		
West Central			Clinton	15	12
Auglaize	480	190	Lycoming	28	14
Champaign	309	116	Tioga	14 19	13
Clark	593	89	Average	19	14
Darke	503	240			
Hardin	140	-	West		
Logan	161	_	Armstrong	43	22
Mercer	423	145	Beaver	51	_
Miami	616	231	Butler	90	91
Shelby	359	109	Indi ana	19	45
Average	398	160	Jefferson	-	68
<u> </u>			Lawrence	69	<u> 54</u> 56
			Average	54	56
			_		

	: Average	number	•	,	:	Avena	ge n	umber
			•			of bo		
State and		of borers per 100 plants		State and		100 p		
county	: 1949 :			county		1949	2	1950
Pennsylvania (Conti	nued)		Pennsylvania (Continue	ed)				
Central				Southeast				
Blair	30	30		Berks		51		26
Cambria	even	96		Bucks		72		89
Centre	11			Chester		93		65
Clearfield	48	70		Delaware		125		40
Columbia	17	20		Lancaster		58		72
Dauphin	76	50		Lebanon		22		8
Huntingdon	26	20		Montgomery		121		84
Juanita Mifflin	59 52	10 128		Philadelphia		<u>40</u> 73		<u>20</u> 50
Montour	2			Average .		13		50
Northumberland	~	34		State mean				
Perry	48	22		comparable		•		
Snyder	23	2		counties (41)		58		40
Union	9	6		00 000 100 (41)				40
Average	34	$\begin{array}{r} 2 \\ \underline{6} \\ 41 \end{array}$		Rhode Island				
<u> </u>		·		(State Dept. of Agr.	,			
East				and Conservation)				
Carbon		11						
Lehigh	36	8		Kent		-		53
Luzerne	48	8		Newport		79		_
Northampton	13	12		Providence		53		62
Schuylkill	32	<u>42</u> 16		Washington		13		21
Average	32	10		Ctoto moon				
Southwest				State mean				
Allegheny	169	_		comparable counties (2)		22		/7
Fayette	321	37		councies (2)		33		41
Greene	<i>-</i>	48		South Dakota				
Somerset	36	176		(Agr. Expt. Sta.)				
Washing ton	202	49		(1181 , 11111 , 1111)				
Westmoreland	167	94		North Central				
Average	179	81		Brown		44		
				Campbell		8		_
South				Potter		8		
Adams	45	32		Walworth		<u>72</u> 33		
Bedford	2	30		Average		33		
Cumberland	68	24		_				
Franklin	37	34		Northeast		7 ~ 0		
Fulton York	8	33		Codington		150		
Average	<u>62</u> 37	20		Day Deuel-Hamlin		50		
v A et a Re	31	29		Grant		57		77
				Rober ts		_		
				Average	•	86		<u>52</u> 64
								04

		4					
	Average	number :	•	: Average number			
	of bore		:		ers per		
	100 pla		State and :	100 pl			
county	1949 :	1950 :	county :	1949	: 1950		
South Dakota (Continued Central-	1)		Virginia (Agr. Expt. Sta.)				
Buffalo	8		(Hgr. mape. Dea.)				
Hughes	12	_	Accomac	134	_		
Hyde		_	Augusta	20	87		
Sully	2	_	Clarke	118	105		
Average	6 - 2 7		Culpepper	131	90		
11,010'80	,		Fairfax	7	-		
East Central			Fauquier	65	42		
Brockings	194	83	Frederick	125	117		
Hanson-McCook	154	211	Loudoun	127	112		
Kingsbury	83	65	Nansemond	8	_		
Lake-Miner	104	146	Norfolk	64			
Minnehaha	750	204	Northampton	85	_		
Moody	317	117	Princess Anne	207	-		
Sanborn	494		Rockingham	-	198		
iverage	299	138	Shenando ah	-	122		
			Washington		204		
Southeast							
Bon Homme	_	184	State mean				
Clay-Union	600	422	comparable	0.4	00		
Hutchinson	() 0	176	ccunties (6)	97	92		
Lincoln-Turner	640	403	West Virginia				
Yankton	<u>487</u> 576	<u>404</u> 318	(State Dept. of Agr	n)			
Average	570	318	(Duane Debu. OINE	• /			
State mean			Marshall		225		
comparable			Mason	2	65		
counties (9)	370	228	Nicholas	7	14		
004110165 (//	210	~~0	Ohio	122	37		
Vermont							
(State Dept. of Agr.)		State mean				
•			comparable				
Bennington	3	5	counties (3)	44	39		
Chittenden	$\operatorname{\mathtt{Tr}}$	0					
Franklin	2	_					
Grand Isle	_	2					
Orange	2	Tr					
Rutlard	6	1					
Washington	6	2					
Wirdham	6 3 2	1 2 2 2					
Windsor	2	2					
State Toon							
State mean comparable							
comparable counties (7)	3	2					
COUNTES (7)		~					

	: Average		•		: Average number		
	: of bore	-	•		rers per		
State and	: <u>100 pla</u>		: State and	: 100 p			
county	: 1949	1950	: county	: 1949	: 1950		
			. (0)				
Wisconsin			Wisconsin (Continued)				
(State Dept. of A	•		Central	~.	0/		
and Extension Se	rvice)		Adams	74	26		
			Fond du Lac	180	100		
Northwest	0.5	0.4	Juneau	, 316	20		
Barron	97	24	Marquette	344	70		
Burnett	37	117	Green Lake	(38		
Chippewa	59	24	Outagamie	61	113		
Douglas	66	_	Portage	10	29		
Dunn	392	39	Waupaca	58	10		
Eau Claire	200	21	Waushara	18	42		
Pierce	537	140	Winnebago	43	83		
Polk	186	49	Wood	16	<u>13</u> 49		
St. Croix	1114	33	Average	112	49		
Washburn	47	10					
Average	274	51	Southwest				
			Crawford	248	14		
North Central			Grant	488	123		
Clark	4	_	Iowa	122	100		
Marathon	12	-	Lafayette	483	62		
Taylor	<u>5</u> 7	-	Richland	133	22		
Áverage	7		Sauk	273	<u>44</u> 61		
			Average	291	61		
Northeast							
Brown	5 5	92	South Central				
Calumet	49	16	Columbia	228	51		
Door	50	58	Dane	166	57		
Kewaunee	43	36	Dodge	102	56		
Manitowoc	35	10	Green	140	64		
Marinette		87	${ t Jefferson}$	148	62		
Oconto		56	Rock	215	78		
Shawano	9	30	Walworth	376	50		
Average	40	48	Average	196	60		
			_				
West Central			Southeast				
Buffalo	, 489	32 33	Kenosha	(272	78		
Pepin	(40)	33	Racine	312	164		
Jackson	325	18	Sheboygan	127	38		
La Crosse	652	25	Washington	1	78		
Monroe	70	32	Ozaukee	78	66		
Trempealeau	275	27	Olaukee	(30		
Vernon	280	5	Waukesha	(,,,,	52		
Average	348	25	Milwaukee	(110	_		
			Average	157	79		
			11401020	± <i>J</i>	, ,		
			State mean				
			comparable				
			counties (52)	213	51		







